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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/753,666	01/04/2001	Kazutoshi Takayama	0994-0206P	1904

7590 11/29/2002

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EXAMINER

LUK, EMMANUEL S

ART UNIT	PAPER NUMBER
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1722

DATE MAILED: 11/29/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/753,666

Applicant(s)

TAKAYAMA ET AL.

Examiner

Emmanuel S. Luk

Art Unit

1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 1722

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bacchi et al in view of Hehl.

Art Unit: 1722

Bacchi teaches a robot having rotational drive units (50, 52 and 92) disposed in a base housing (13), a first arm (12) with a proximal end portion of the first arm fixed to the rotary shaft (53, 70), a first proximal-side pulley (54, 72) disposed coaxially with the immediate shaft (53, 70), a second distal pulley (56, 76) fixed to a distal end portion of the first arm, an intermediate shaft (57) rotatably supported on the distal end portion of the first arm, the intermediate shaft penetrating a center portion of the second proximal-side pulley (56, 76), a first distal-side pulley (58) provided integrally with the immediate shaft, a first rotation transmission section for drivingly connecting the first distal-side pulley an the first proximal-side pulley, a second arm (15) with a proximal end portion of the second arm fixed to the intermediate shaft, a distal-side shaft rotatably supported on a distal end portion of the second arm, a second distal-side pulley provided integrally with the distal-side shaft, a second rotation transmission section for drivingly connecting the second distal side pulley with the second proximal-side pulley.

Bacchi fails to teach a chuck fixed to the distal-side shaft, a tooth-number ratio between the connected pulleys, the support base disposed on a bed of an injection molding machine, the chuck is moved through a space between the upper and lower tie bars and the support base is supported by a movement mechanism for effecting movement in the front/back direction of the injection molding machine.

Hehl teaches extraction means (13) for an injection molding machine where the support base is disposed on a bed (19, crossframe), the extractor (10) having grippers, e.g. pneumatically activated suction device (Col. 3, lines 20-40) allowing for the extractor to remove the article (11) as a chuck. The extractor enters through a space

Art Unit: 1722

between the tie bars (26, crosspieces). The support base is supported by a movement mechanism for effecting movement in the front/back direction by movement on a support rail (31).

In regards to the tooth-number ratio, the variables 'm' and 'n' are broadly interpreted as any number including $m=n$, $m=1$ and/or $n=1$. Additionally, Bacchi teaches the ratio of the diameters of hand drive pulley (66) and hand pulley (86) is 1:2, thus it would have been obvious to one of ordinary skill in the art to recognize that the tooth-number ratio between the two pulleys are 1:n because as described by the applicants (p. 14) the term "tooth number" is used in relation to pulley encompasses a circumferential length of each pulley. The remaining pulleys taught by Bacchi are not specifically taught a tooth-number ratio and can have different ratios including 1:1. It would have been obvious to one of ordinary skill in the art to modify the pulleys of Bacchi for the desired tooth-number ratios between respective pulleys because it allows for controlled movement of the angular displacement of the arms in respect to the pulleys.

It would have obvious to one of ordinary skill in the art to modify Bacchi by incorporating the robot arm into the injection molding machine as taught by Hehl for article removal because it provides an improved articulated article extractor.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bacchi in view of Hehl as applied to claims 1-3, 5 and 6 above, and further in view of Hashimoto et al.

Bacchi fails to specifically teach the distance between the center of the second proximal-side pulley and the center of the second distal-side pulley is set to the distance between the center of the first proximal-side pulley and the center of the first distal-side pulley.

However, Hashimoto teaches the ratio of the distance (L1) between the center point of the pulley portion (16c) of the second output shaft member (16) and that of the basal pulley portion (82a) of the second arm (82) to the distance (L2) between the center point of the basal pulley portion (82a) of the second arm (82) and that of the pulley portion (83a) of the hand (83) is 1 to 1. In this case, Hashimoto relates to a transmission gear for transmitting two rotary motions from a driving mechanism to a working mechanism and relates to the driving of rotational arms connected at points that are driven by pulleys. Thus, it would have been obvious to one of ordinary skill in the art to recognize Hashimoto as being related to the driving mechanism of the robot arm taught by Bacchi.

It would have been obvious to one of ordinary skill in the art to modify Bacchi with having the distance between the center of the respective pulleys to have the same distance as taught by Hashimoto because it allows for the desired length or the robot arm to reach for extracting the product.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bacchi in view of Hehl as applied to claims 1-3, 5 and 6 above, and further in view of Broderick.

Bacchi fails to teach a horizontal arm supported to be rotatable in the vertical direction and support base attached to the other end of the arm and moves between tie bars disposed at two different positions in the transverse direction of the injection molding machine.

Broderick teaches an injection molding machine with a horizontal robot arm (50) moves between tie bars (20) and is rotatable in the vertical direction (Fig. 1-3), the arm having grippers (70), or chucks, to remove the article (A) and is supported on a movable support base (52) that is moved through space (Fig. 1).

It would have been obvious to one of ordinary skill in the art to substitute the robotic arm of the injection molding machine taught by Broderick with the robotic arm taught by Bacchi because it allows for improved article handling and removal of the product.

7. Claim 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bacchi in view of Hehl and Hashimoto.

Bacchi teaches a robot having rotational drive units (50, 52 and 92) disposed in a base housing (13), a first arm (12) with a proximal end portion of the first arm fixed to the rotary shaft (53, 70), a first proximal-side pulley (54, 72) disposed coaxially with the immediate shaft (53, 70), a second distal pulley (56, 76) fixed to a distal end portion of the first arm, an intermediate shaft (57) rotatably supported on the distal end portion of the first arm, the intermediate shaft penetrating a center portion of the second proximal-side pulley (56, 76), a first distal-side pulley (58) provided integrally with the immediate

Art Unit: 1722

shaft, a first rotation transmission section for drivingly connecting the first distal-side pulley an the first proximal-side pulley, a second arm (15) with a proximal end portion of the second arm fixed to the intermediate shaft, a distal-side shaft rotatably supported on a distal end portion of the second arm, a second distal-side pulley provided integrally with the distal-side shaft, a second rotation transmission section for drivingly connecting the second distal side pulley with the second proximal-side pulley.

Bacchi fails to teach a chuck fixed to the distal-side shaft, a tooth-number ratio between the connected pulleys, the support base disposed on a bed of an injection molding machine, the chuck is moved through a space between the upper and lower tie bars and the support base is supported by a movement mechanism for effecting movement in the front/back direction of the injection molding machine, the distance between the center of the second proximal-side pulley and the center of the second distal-side pulley is set to the distance between the center of the first proximal-side pulley and the center of the first distal-side pulley.

Hehl teaches extraction means (13) for an injection molding machine where the support base is disposed on a bed (19, crossframe), the extractor (10) having grippers, e.g. pneumatically activated suction device (Col. 3, lines 20-40) allowing for the extractor to remove the article (11) as a chuck. The extractor enters through a space between the tie bars (26, crosspieces). The support base is supported by a movement mechanism for effecting movement in the front/back direction by movement on a support rail (31).

In regards to the tooth-number ratio, the variables 'm' and 'n' are broadly interpreted as any number including $m=n$, $m=1$ and/or $n=1$. Additionally, Bacchi teaches the ratio of the diameters of hand drive pulley (66) and hand pulley (86) is 1:2, thus it would have been obvious to one of ordinary skill in the art to recognize that the tooth-number ratio between the two pulleys are 1:n because as described by the applicants (p. 14) the term "tooth number" is used in relation to pulley encompasses a circumferential length of each pulley. The remaining pulleys taught by Bacchi are not specifically taught a tooth-number ratio and can have different ratios including 1:1. It would have been obvious to one of ordinary skill in the art to modify the pulleys of Bacchi for the desired tooth-number ratios between respective pulleys because it allows for controlled movement of the angular displacement of the arms in respect to the pulleys.

Hashimoto teaches the ratio of the distance (L1) between the center point of the pulley portion (16c) of the second output shaft member (16) and that of the basal pulley portion (82a) of the second arm (82) to the distance (L2) between the center point of the basal pulley portion (82a) of the second arm (82) and that of the pulley portion (83a) of the hand (83) is 1 to 1. In this case, Hashimoto relates to a transmission gear for transmitting two rotary motions from a driving mechanism to a working mechanism and relates to the driving of rotational arms connected at points that are driven by pulleys. Thus, it would have been obvious to one of ordinary skill in the art to recognize Hashimoto as being related to the driving mechanism of the robot arm taught by Bacchi.

Art Unit: 1722

It would have been obvious to one of ordinary skill in the art to modify Bacchi by incorporating the robot arm into the injection molding machine as taught by Hehl for article removal because it provides an improved articulated article extractor and having the distance between the center of the respective pulleys to have the same distance as taught by Hashimoto because it allows for the desired length or the robot arm to reach for extracting the product.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bacchi in view of Hehl and Broderick.

Bacchi teaches a robot having rotational drive units (50, 52 and 92) disposed in a base housing (13), a first arm (12) with a proximal end portion of the first arm fixed to the rotary shaft (53, 70), a first proximal-side pulley (54, 72) disposed coaxially with the immediate shaft (53, 70), a second distal pulley (56, 76) fixed to a distal end portion of the first arm, an intermediate shaft (57) rotatably supported on the distal end portion of the first arm, the intermediate shaft penetrating a center portion of the second proximal-side pulley (56, 76), a first distal-side pulley (58) provided integrally with the immediate shaft, a first rotation transmission section for drivingly connecting the first distal-side pulley an the first proximal-side pulley, a second arm (15) with a proximal end portion of the second arm fixed to the intermediate shaft, a distal-side shaft rotatably supported on a distal end portion of the second arm, a second distal-side pulley provided integrally with the distal-side shaft, a second rotation transmission section for drivingly connecting the second distal side pulley with the second proximal-side pulley.

Bacchi fails to teach a chuck fixed to the distal-side shaft, a tooth-number ratio between the connected pulleys, the support base disposed on a bed of an injection molding machine, the chuck is moved through a space between the upper and lower tie bars and the support base is supported by a movement mechanism for effecting movement in the front/back direction of the injection molding machine, a horizontal arm supported to be rotatable in the vertical direction and support base attached to the other end of the arm and moves between tie bars disposed at two different positions in the transverse direction of the injection molding machine.

Hehl teaches extraction means (13) for an injection molding machine where the support base is disposed on a bed (19, crossframe), the extractor (10) having grippers, e.g. pneumatically activated suction device (Col. 3, lines 20-40) allowing for the extractor to remove the article (11) as a chuck. The extractor enters through a space between the tie bars (26, crosspieces). The support base is supported by a movement mechanism for effecting movement in the front/back direction by movement on a support rail (31).

In regards to the tooth-number ratio, the variables 'm' and 'n' are broadly interpreted as any number including $m=n$, $m=1$ and/or $n=1$. Additionally, Bacchi teaches the ratio of the diameters of hand drive pulley (66) and hand pulley (86) is 1:2, thus it would have been obvious to one of ordinary skill in the art to recognize that the tooth-number ratio between the two pulleys are 1:n because as described by the applicants (p. 14) the term "tooth number" is used in relation to pulley encompasses a circumferential length of each pulley. The remaining pulleys taught by Bacchi are not

Art Unit: 1722

specifically taught a tooth-number ratio and can have different ratios including 1:1. It would have been obvious to one of ordinary skill in the art to modify the pulleys of Bacchi for the desired tooth-number ratios between respective pulleys because it allows for controlled movement of the angular displacement of the arms in respect to the pulleys.

Broderick teaches an injection molding machine with a horizontal robot arm (50) moves between tie bars (20) and is rotatable in the vertical direction (Fig. 1-3), the arm having grippers (70), or chucks, to remove the article (A) and is supported on a movable support base (52) that is moved through space (Fig. 1).

It would have been obvious to one of ordinary skill in the art to modify Bacchi with the addition of an injection molding machine taught by Broderick because it allows for improved article handling and removal of the product and by incorporating the robot arm into the injection molding machine as taught by Hehl for article removal because it provides an improved articulated article extractor.

Response to Arguments

9. Applicant's arguments filed 9/17/02 have been fully considered but they are not persuasive. The applicants have argued that the prior art, Bacchi and Hehl, fails to teach or suggest a chuck fixed to the distal side shaft that is rotatably supported on a distal end portion of the second arm. However, Bacchi teaches a hand (30) located at the distal end (34) of an arm and also Hehl teaches an extractor comprising of chucks (Fig.4) located on arms that are rotatably supported for removal of articles from an

injection molding machine. It would have been obvious to one of ordinary skill in the art that the combination of Bacchi and Hehl teaches the feature claimed by the applicant. Hehl teaches an arm that moves to remove articles from an injection molding machine, and this arm is automated and having multiple elements including rotatable arm units. This incorporation of a robotic arm is similar to Bacchi and thus it would have been obvious to one of ordinary skill in the art to incorporate the robotic arm of Bacchi into injection molding machine of Hehl.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

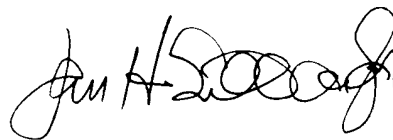
Art Unit: 1722

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (703) 305-1558. The examiner can normally be reached on Monday through Friday 8 to 4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jan S. Silbaugh can be reached on (703) 308-3829. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

E. L.
November 6, 2002



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11/26/02